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Experience of integrating vitamin A supplementation into polio campaigns in the African Region

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ABSTRACT

Introduction: Vitamin A deficiency is a public health problem that affects children across the WHO African Region. Countries have integrated vitamin A supplementation in different child health interventions, most notably with polio campaigns. The integration of vitamin A in polio campaigns was documented as a best practice in Angola, Chad, Cote d'Ivoire, Tanzania, and Togo. There are potential risks to vitamin A supplementation associated with the polio endgame and certification in the African Region.
Methods: We reviewed the findings from the documentation of best practices assessment that was conducted by the WHO Regional Office for Africa in 2014 and 2015 in the five countries that noted integration of vitamin A with polio as a best practice. In addition, we reviewed the coverage rates for oral poliovirus vaccine and vitamin A supplementation in Angola, Chad, Cote d'Ivoire, Tanzania, and Togo in 2014 and 2015.
Results: Vitamin A deficiency in 2004 ranged from 35% in Togo to as high as 55% in Angola. All five countries integrated vitamin A supplementation in at least one campaign in 2013–2014 and all achieved over 80% coverage for vitamin A supplementation when it was integrated with polio.
Discussion: Given the progress of the polio program, and decreasing campaigns, there is a risk that fewer children will be reached each year with vitamin A supplementation. We recommend that for countries strengthen the integration of vitamin A supplementation with routine immunization services.

1. Introduction

Vitamin A deficiency is a major public health problem that affects preschool age children primarily in the regions of Africa and South East Asia [1]. Inadequate or low intakes of vitamin A between the ages of 6 and 59 months can lead to vitamin A deficiency which in severe cases can cause visual impairment, night blindness as well as an increased risk of illness from infections such as measles and diarrhoea [2]. World Health Organization (WHO) regional estimates indicate that the highest proportion of preschool age children affected by night blindness is in Africa at 2% which is four times higher than estimated rates in South East Asia at 0.5% [2]. Vitamin A deficiency is among the 19 top risk factors for childhood death globally and is responsible for close to 6% of child deaths in Africa [3]. WHO guidelines recommend vitamin A supplementation in infants and children ages 6–59 months once every 4–6 months in settings where vitamin A deficiency is a public health problem [4].

Countries in the WHO African Region have integrated the delivery of vitamin A supplements to children in routine immunization services. The national schedules adopted usually are based on schemes suggested in the WHO Guideline for Vitamin A Supplementation in infants and children 6–59 months of age [4]. It is recommended that immunization be part of a comprehensive strategy that includes promotion of breastfeeding, vitamin A supplementation, safe drinking water, and sanitation [5]. In addition to routine immunization, countries have used other health program platforms such as child health days and the integration with polio supplemental immunization activities (SIAs) to give doses of vitamin A.

Using polio as a platform to provide vitamin A supplementation globally was documented in a paper published in 2000 [6]. The

Abbreviations: GPEI, Global Polio Eradication Initiative; OPV, oral polio virus; SIAs, supplementary immunization activities; UNICEF, United Nations Children's Fund; WHO, World Health Organization.

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Global Polio Eradication Initiative (GPEI) is closer than ever to eradicating polio noting that at the time of this writing, the most recent case of wild polio virus was reported from Nigeria in July 2014 [7]. However, until polio-free certification of the region is completed, countries in the African Region, still at risk of polio importation or with low immunity profiles, continue to run SIAs with close to 100 rounds conducted in 2015 [8].

In 2014 and 2015 the WHO Regional Office for African conducted an eight-country assessment of best practices in integration of vitamin A with polio campaigns. Among the eight, five countries (i.e., Angola, Chad, Cote d'Ivoire, Tanzania, and Togo) qualified as best practice examples.

The purpose of this paper is to review and describe what constituted best practice in the use of polio as a vehicle for vitamin A supplementation in the five countries, and to consider potential risks to vitamin A supplementation associated with the polio endgame and certification in the African Region.

2. Methods

We reviewed the findings from the documentation of best practices assessment that was conducted by the WHO Regional Office for Africa in 2014 and 2015 which noted integration of vitamin A supplementation in polio campaigns as a best practice in five of the eight countries assessed (i.e., Angola, Chad, Cote d'Ivoire, Tanzania, and Togo). Our analysis included an in-depth review of the methods for planning, organizing, and implementing polio SIAs including the administration of vitamin A supplementation in the five countries. In addition to a review of the best practices reports, a comprehensive review of the coverage rates for oral polio virus (OPV) and vitamin A supplementation was conducted for all five countries.

The best practices were grouped into the following three categories: campaign planning, implementation of campaign, and post campaign activities.

2.1. Campaign planning

In all five countries, cross program coordination teams were put in place and planning coordination meetings were held between Expanded Program on Immunization (EPI) and nutrition stakeholders to ensure a common understanding of vitamin A supplementation and delivery of OPV for the planned campaigns. A detailed budget was developed to provide for both interventions and included human resources, training, supplies, transportation, and any other associated costs of delivering the interventions. The coordination teams conducted resource mobilization through government, WHO, the United Nation Children's Fund (UNICEF) and other partners as needed in addition to ensuring the timely availability of funds to implement the campaign.

Microplanning activities were conducted and a detailed action plan was developed to ensure that target populations were clearly defined and that the campaign reached as many children as possible including nomadic and other hard to reach children. Government, religious, and local leaders were visited and advocacy was conducted on the importance of polio vaccination and vitamin A supplementation. Other social mobilization activities were also conducted including television spots, radio segments, printing of banners, and T-shirts to ensure communities were aware of the campaign. Focus was placed on the addition of vitamin A supplementation to polio immunization to encourage more parents to bring their children.

Training of supervisors and vaccinators was completed for regular OPV distribution as well as training and correct vitamin A dosing, how to dispose of used capsules, and how to record and calculate coverage. This training was critical for overcoming the difficulties of administering multiple interventions in one campaign as was noted by field staff in Angola and Cote d'Ivoire during the best practices documentation exercise. For data collection, tally sheets, tools, and checklists were revised to include vitamin A in addition to OPV to ensure ease of using one form.

2.2. Implementation of the campaign

The campaigns began with an official launching ceremony where the importance of polio vaccination and vitamin A supplementation was explained to the population. Continued social mobilization activities and awareness raising were done throughout the campaign which typically lasted 2–4 days. The campaigns were conducted according to detailed action plans with vitamin A given after OPV as per WHO guidelines [8].

In Chad, averages of 3–4 campaigns are conducted per year targeting the whole country and typically included the integration of vitamin A supplementation twice per year. An estimated 3.5% of the Chadian population is nomadic [9], with children that can be difficult to reach for immunization. Chad therefore worked to specifically target polio campaigns and thereby vitamin A supplementation in nomadic children by tracking nomadic movements. The authorities agreed on flexible dates of campaigns with local leaders and chiefs, and worked in collaboration with them to ensure adequate awareness-raising in those communities [9].

With regard to data collection and reporting in all five countries, vaccinators and supervisors ensured that data for both interventions were recorded and underwent daily synthesis. Refusals and adverse events were documented and managed and health care workers were supervised and their work monitored. In Togo, it was specifically noted that activities included daily meetings during the campaign for monitoring and oversight [10].

2.3. Post-campaign activities

At the completion of the campaign, all coverage data on OPV and vitamin A doses were collected and reported to the next higher level (i.e., district to regional and regional to national) and independent monitoring activities were conducted to verify the coverage data collected. Post campaign review meetings were held by the coordination teams to consolidate lessons learned and finalize campaign reports.

3. Results

Table 1 shows estimates published by UNICEF for the five countries reviewed in this paper, where prevalence of vitamin A deficiency in children aged 6–59 months ranged from 35% in Togo to 55% in Angola in 2004.

Table 1
Vitamin A deficiency[a] Prevalence in Angola, Chad, Cote d'Ivoire, Tanzania, and Togo, 2004.

Country	Vitamin A deficiency prevalence [8,9]
Angola	55%
Chad	45%
Cote d'Ivoire	42%[b]
Tanzania	37%
Togo	35%

[a] Note vitamin A deficiency is shown as estimated percentage of children under 6 with sub clinical vitamin A deficiency.

[b] Prevalence data were not available for Cote d'Ivoire. This is the percentage of the population at risk of VAD [9].

Table 2
Polio Campaigns with Vitamin A Integration in Angola, Chad, Cote d'Ivoire, Tanzania, and Togo 2013–2014.

Country	2013		2014	
	Total rounds	Rounds with vitamin A	Total rounds	Rounds with vitamin A
Angola	4	1	3	1
Chad	9	2	5	2
Cote d'Ivoire	3	2	3	2
Tanzania	0	0	1[a]	1
Togo	2	2	2	1

[a] Measles round.

Four out of the five countries integrated vitamin A supplementation in at least one polio round in both 2013 and 2014 (Table 2). Tanzania did not have polio campaigns in 2013 or 2014, but integrated vitamin A supplementation into their measles campaign and reached over 100% of the target population. Over 100% coverage is a result of influx of refugees and nomadic populations into the calculated target populations. Chad, Cote d'Ivoire and Togo met the threshold of two doses of vitamin A annually by integrating vitamin A supplementation in two polio rounds in 2013 and Chad and Cote d'Ivoire integrated in two rounds in 2014.

All five countries achieved over 80% coverage for vitamin A supplementation when it was integrated with OPV (Fig. 1). For all campaigns, the target population for OPV was 0–59 months and the target population for vitamin A supplements was 6–59 months (supplementation under 6 months is not recommended). In addition to high OPV coverage, Angola, Chad, Cote d'Ivoire, and Togo achieved high OPV coverage with the lowest coverage rate of 84% in Angola in 2013.

4. Discussion

There has been progress in reducing the prevalence of vitamin A deficiency in children 6–59 months globally, with more than 40 developing countries reaching 70% of their children with at least one capsule of vitamin A supplementation per year [11]. Polio campaigns have served as a vehicle to provide two doses of vitamin A yearly to children <5 years in the five countries discussed in this paper. However, vitamin A deficiency remains a serious public health problem in Africa and poses a risk for increased susceptibility

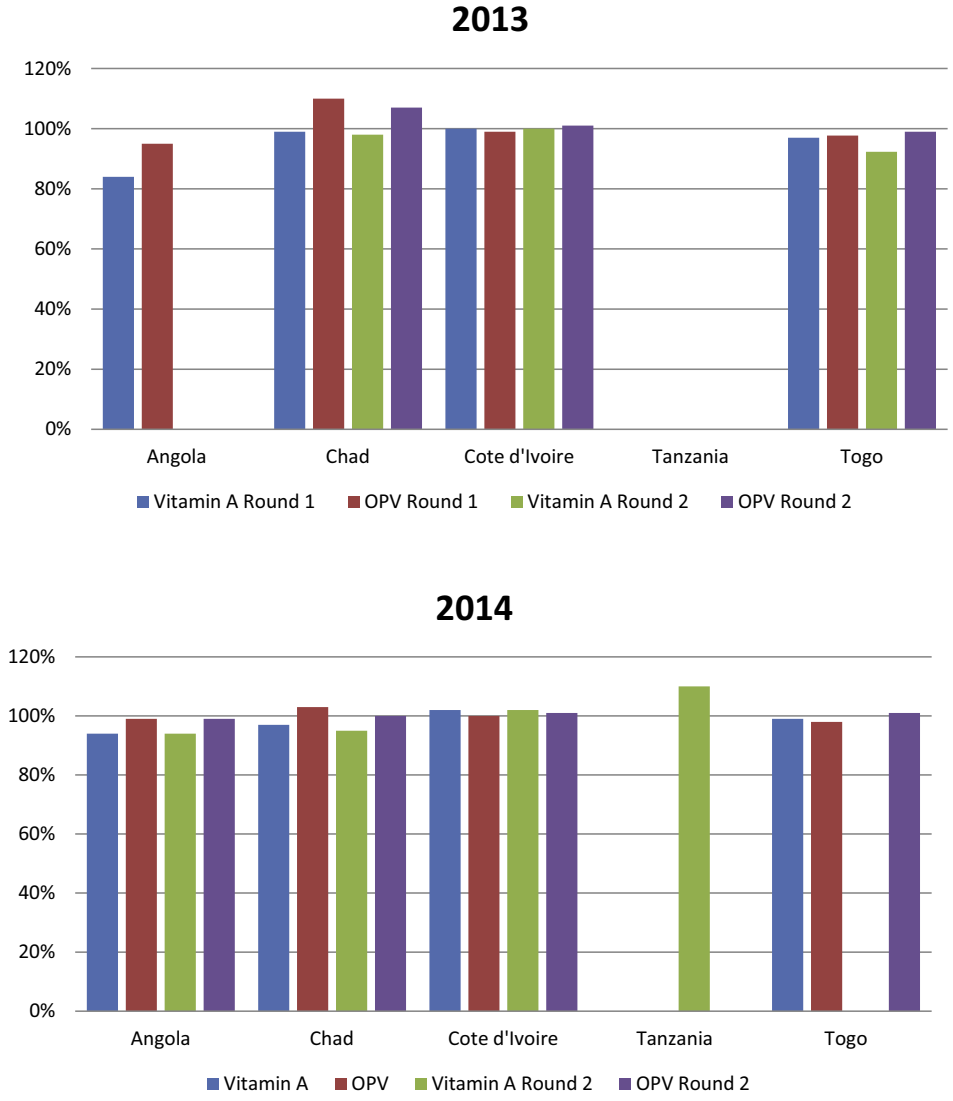

Fig. 1. Coverage* rates of OPV and Vitamin A through SIAs in Angola, Chad, Cote d'Ivoire, Tanzania**, and Togo 2013–2014. *Over 100% coverage is a result of influx of refugees and nomadic populations into the calculated target population. **Tanzania did not conduct any rounds in 2013.

to other diseases such as measles and diarrheal disease. The ability to integrate vitamin A in nationwide polio campaigns has allowed countries to reach high coverage rates of doses given with both interventions as evidenced in the results section. The five countries discussed have developed and implemented strong operating procedures for the planning and coordination, implementation, and reporting phases of polio campaigns which has ensured increased children reached as well as improved data quality from campaigns.

With the current predictions of polio eradication by 2019, there is a need for countries to ensure that vitamin A is provided through their routine immunizations systems and reported together with their routine immunization data. According to the 2015 WHO vaccine preventable diseases monitoring system [12], which includes immunization schedules for all countries, Angola includes vitamin A supplementation at 6 and 9 months, Cote d'Ivoire includes vitamin A supplementation at 6, 12, 18, 24, and 30 months, and Togo includes vitamin A supplementation at 9 months. Chad and Tanzania do not include vitamin A supplementation as part of their routine immunization schedules currently but Tanzania is revising the schedule to include 6 months supplementation of vitamin A for children 6–59 months. It is therefore necessary to continue and strengthen in-country coordination with nutrition programs as has been documented in Angola, Cote d'Ivoire and Togo.

In Cote d'Ivoire, a number of lessons learnt regarding integration of vitamin A supplementation with OPV were noted. These lessons include the importance of grassroots micro planning, good local coordination, involvement of all stakeholders at the district and national levels in the campaign as well as in social mobilization, involvement of local authorities including civil society, religious leaders, military, and involvement of local radio stations. There were also challenges noted in Cote d'Ivoire which included slowing down of vaccination teams as they had to administer the two interventions, the additional resources from the nutrition program not always arriving on time, the rounds being very close together, and the low daily allowances paid to vaccinators [13].

Although efforts have been made to increase supplementation of vitamin A in the African Region, finding a sustainable mechanism to deliver the supplement remains a problem. Of the five countries reviewed in this paper, four routinely integrate vitamin A into polio campaigns. Given the reduced polio risk in Tanzania, the number of annual polio campaigns has decreased and the country now looks to other campaigns such as measles to integrate supplementation of vitamin A. In the context of the Polio Endgame Strategy 2013–2018 [14] the number of polio campaigns will continue to decrease in the coming years which may pose a risk to the continued supplementation of vitamin A in many countries. It was noted as part of the best practices documentation that the Government of Angola provides all financial resources for immunization campaigns excluding independent monitoring and social mobilization and therefore may be at less risk of decreasing opportunities to supplement children with vitamin A.

A second risk to vitamin A supplementation programs as polio winds down is in regards to reported coverage data [15]. Polio has provided a mechanism for reporting nationwide data on supplements given for vitamin A in countries and as we near the endgame of polio, there is a risk that both doses of vitamin A supplements will reduce and that data quality and reporting will decrease.

One limitation to our report is the data available for vitamin A deficiency, supplementation approaches and coverage is limited and several years old and therefore, we do not have an accurate understanding of the prevalence of vitamin A deficiency in the five countries reviewed in this paper, and whether the combination of polio and vitamin A supplementation has affected it. However the processes that these five countries have followed to leverage polio for vitamin A supplementation offer important lessons that need to be shared.

Given that no single new case of WPV has been reported in the African Region at the time of writing this report, polio campaigns are on the decrease, with a risk that fewer children will be reached each year with vitamin A supplementation. We recommend countries strengthen integration of vitamin A supplementation with routine immunization services.

Conflict of interest

The authors declare that there is no conflict to report

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